



# TYPE APPROVAL CERTIFICATE

Certificate no.:  
**TAS000008E**  
Revision No:  
**3**

**This is to certify:**  
**that the Brakes**

with type designation(s)  
**Multi disc brakes**

issued to  
**Reggiana Riduttori S.r.l.**  
**San Polo d'Enza RE, RE, Italy**

is found to comply with  
**DNV standard DNV-ST-0378 – Offshore and platform lifting appliances**

**Application:**  
**Spring activated disc brakes with hydraulic release**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**

Issued at **Høvik** on **2024-12-11**

for **DNV**

This Certificate is valid until **2029-12-10**.  
DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Thomas Henrik Tranesen**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

## Product description

Parking and emergency brakes. The brakes are spring activated with hydraulic release. The braking momentum is added up of frictional forces acting on several discs and connected to the rotating shaft. Different number of springs and discs gives different brake torque for each brake type.

### RF5:

Brake type	RF5-21	RF5-29	RF5-43	RF5-65	RF5-85	RF5-110	RF5-130	RF5-150
Brake torque (N*m)	210	290	430	650	850	1100	1300	1500

Number of brake sizes and brake torques are as given for RF5 for the following brake types:

- RFF5
- DG-RF/313
- DG-RF/314
- DG-RF/315
- DG-RF/316
- DG-RFF/396

### RF2:

Brake type	RF2/7	RF2/14	RF2/21	RF2/32	RF2/43	RF2/60
Brake torque (N*m)	70	140	210	320	430	600

Number of brake sizes and brake torques are as given for RF2 for the following brake types:

- DG-RF/288
- DG-RF/289
- DG-RF/290

### RF170-290:

Brake type	RF170	RF200	RF230	RF290
Brake torque (N*m)	1700	1980	2260	2830

Maximum design pressure for all brakes is 250 bar.  
 Above torques are based on a friction coefficient of 0.135.

## Application/Limitation

1. All load-bearing materials are to be delivered with 3.1 certificates, documenting mechanical properties and chemical composition in accordance with the DNV-ST-0378 Sec. 3
2. Support and fixation of the brakes are not covered by this type approval and are to be separately considered/ approved in each case.
3. The friction factor has not been evaluated; the value is provided by the manufacturer.
4. There is no limitation for design temperature (Td) given by the manufacturer, as working temperature is specified to be approximately 100 degrees Celsius.

## Type Approval documentation

Drwg no.	Rev.	Title	Description
F401011400	I	Corpo freno RF2, Input support	
F022913500	G	Albero entrata freno, Input shaft	
F265460200	H	Coperchio chiusura freno RR105, Support	
F400331400(*)	K	Corpo freno RF5, Support	
C200411	B	Disco freno acciaio, Iron disc	
C200863(*)	D	Disco freno sinterizzato RF5, Sintered disc	
F022833000	I	Albero ent. Freno RF5, Input shaft	
F180253000	H	Pistone freno, Brake piston	
F140166600(*)	D	Molla per freno RF, Spring	
F266190300(*)	I	Supporto di chiusura freno standard, Support	

F400341400(*)	I	Supporto di accoppiamento e corpo freno, Support
F031983000	N	Albero, Shaft
F400311400	H	Supporto uscita, Output support
F265500200	F	Coperchio, Cover
C200414	C	Disco in acciaio, Iron disc
C200857	C	Disco sinterizzato, Sintered disc
F180383000	H	Pistone freno RF2, Brake piston
F140226600	A	Molla per freno, Brake spring
F022583500	G	Albero, Shaft
F265510200	G	Supporto di chiusura, Closing support
F022553500	O	Albero, Shaft
F400321400	E	Supporto uscita, Output support
F032163500	L	Albero, Shaft
F400371400	G	Supporto uscita, Output support
F266211100	B	Supporto di chiusura, Closing support
F032143500	M	Albero, Shaft
F400361400	I	Supporto uscita, Output support
F266201100	H	Supporto di chiusura, Closing support
F032153500	M	Albero, Shaft
F400621400	B	Supporto uscita, Output support
F032173500	F	Albero, Shaft
F400351400	H	Supporto uscita, Output support
F022803800	P	Albero, Shaft
F261700200	B	Supporto accoppiamento freno RF170-290, Support
F060134200	C	Corona freno RF170, Ring
F021103000	E	Albero in entrata per freno, Brake shaft
C200856	A	Disco freno sinterizzato, Sintered disc
C200406	A	Disco freno acciaio, Steel disc
F070024200	E	Corpo freno, Brake housing
F180024000	F	Pistone spingidischi, Piston
F140116600	C	Molla per freno RF d.est.13.5, External spring
F140126600	C	Molla per freno RF d.est.7.3, Internal spring
F261690200	-	Supporto entrata freno, Input support
REL-155-B	B	Lifting appliances certification, different brake configuration (NL014-10)
REL-152-A	A	Lifting appliances certification brake RF2/60 154B9186 (NL014-10)
-	A	Drawing list
REL-268 (*)	0	Calculations
F180293000(*)	G	Brake piston RF5
-	5/11/19	BRAKE RFF5_150, General arrangement
-	5/11/19	BRAKE RF5_150, General arrangement

### Tests carried out

When DNV product certificate is required, each item is to be function and pressure tested. Manufacturing survey and tests witnessing to be carried out by a DNV surveyor.

### Marking of product

Each brake shall be marked according to DNV-ST-0378 Sec.14.5.

### Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.